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TITLE: Outcomes by Ethnicity: Sentinel Lymph Node Status in Women with Breast Cancer

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14. ABSTRACT Breast cancer incidence and outcomes vary in women of different racial/ethnic backgrounds. Race/ethnicity and tumor biology may affect outcomes. Since regional lymph node status and tumor markers are strong prognostic indicators, this study examines the role of sentinel lymph node status (SLNS) and cyclin E levels in outcomes for women of various races/ethnicities with breast cancer. Data was collected for 400 women from two cohort groups using existing database and medical records. Data included tumor size, nodal status, estrogen receptor status, HER-2/neu status, cyclin E levels and race/ethnicity. A new database organizes unique study data: socioeconomic status and health-related behaviors. Data quality checks and abstraction continue. Subjects will be matched for as many factors as possible. The final sample of 50 Whites/non-Hispanic and 50 others, including Hispanics, will be analyzed to correlate SLNS to race/ethnicity, cyclin E levels to race/ethnicity and SLNS to cyclin E levels. Disease-free survival and overall survival rates cannot be determined for several years and thus are not available during the award period. It is hypothesized prognostic accuracy of SLNS and cyclin E levels are independent of racial/ethnic factors. This finding would suggest SLNS and cyclin E levels could discriminate outcomes within different racial/ethnic groups.					
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## ***Outcomes by Ethnicity: Sentinel Lymph Node Status in Women with Breast Cancer***

### **INTRODUCTION**

Breast cancer incidence and outcomes (disease-free survival and overall survival) vary widely in women of different racial and ethnic backgrounds.<sup>1-2</sup> Differences in health-seeking behaviors, socioeconomic disparities, cultural influences, stage at diagnosis, estrogen receptor status, treatment and tumor biology are all possible factors impacting breast cancer outcomes for women of different racial and ethnic groups.<sup>2-6</sup>

The strongest prognostic indicator for breast cancer patients is the regional lymph node status (the presence of lymph node metastasis and the number of involved nodes). Lymphedema is a serious complication of axillary lymph node dissection (ALND). Sentinel lymph node biopsy (SLNB) used with lymphatic mapping could replace traditional ALND in women with early stage breast cancer if clinical experience and ongoing research indicates acceptable identification and false negative rates and the equivalence of the two techniques for axillary staging, local-regional control of metastases and decreased morbidity.<sup>7</sup>

It is not known if race and ethnicity affect lymph node status or if the value of promising new prognostic indicators under study, such as low molecular weight (LMW) cyclin E, is independent of race and ethnicity. Additional research is needed to determine how and why race and ethnicity impact breast cancer incidence and outcomes.

#### **Objective**

The objective of this study is to further describe differences in disease-free survival and overall survival by examining the role of sentinel lymph node status (SLNS) and cyclin E levels in the outcomes for women of various races and ethnicities with breast cancer.

**Specific Aims:** (1) To evaluate the relationship between race/ethnicity and SLNS in women diagnosed with breast cancer, (2) to evaluate the relationship between race/ethnicity and high levels of LMW cyclin E in women diagnosed with breast cancer and (3) to compare the predictive value of SLNS versus LMW cyclin E levels for women of different races/ethnicities who have been diagnosed with breast cancer.

#### **Target Population**

The study's target population is women diagnosed with breast cancer (Stages 0-IV).

## **BODY**

### **Description of the Research**

During the pre-approval process, the protocol was revised and the data collection methodology was changed to omit the use of the questionnaire (a deviation from the original approved Statement of Work). Prospective data collection using a questionnaire by mail (as proposed) would require obtaining Informed Consent. It was determined that obtaining Informed Consent was not possible for many of the study subjects for various reasons. A Data Abstraction Form was developed and approved for the collection of retrospective data only. The study then met all criteria for a Waiver of Informed Consent and Waiver of Authorization to Use and Disclose Protected Health Information. The revised protocol was approved with waivers for all subjects from The University of Texas MD Anderson Cancer Center (UTMDACC) Institutional Review Board (IRB).

The award study is descriptive research. Upon completion, the study will have examined data from 3 cohort groups of women diagnosed with breast cancer (stages 0-IV). At the time of this Annual Summary, data has been collected for 400 women from Study Group 1 and Study Group 3 using existing databases and medical records. Data quality checks and abstraction continue in preparation for analysis of this preliminary sample (planned May 2005). The 400 subjects are women diagnosed with breast cancer (stages I-III) from the prospective UTMDACC lymphatic mapping database study (IRB# RCR01-309, Study Group 1). Subjects underwent SLNB with or without completion ALND as a component of their surgical management and had LMW cyclin E testing on their primary breast tumor tissue as part of an ongoing prospective UTMDACC clinical trial (IRB# LAB00-222, Study Group 3). A new study-specific database organizes data unique to the study: socio-economic status, education and health-related behaviors. Appendix A of this summary lists data categories.

Paraffin blocks and fresh frozen tissue of the primary breast tumor tissue were preserved for Group 1 subjects when possible. For Group 1 subjects without prior LMW cyclin E testing, additional tissue analysis will be possible for subjects in this group by requesting residual tumor tissue from the UTMDACC Breast Tumor Tissue Bank. Study Group 2 data will be collected during the next annual term and will be introduced for analysis with Group 1 and 3 data.

Study Group 2 includes 395 subjects (stages I-IV) from a completed retrospective study entitled "Cyclin E and Survival in Patients with Breast Cancer." Subjects were not treated at UTMDACC and underwent surgical treatment for removal of the primary tumor as well as ALND. All subjects had LMW cyclin E testing on their breast tumor tissue. Data regarding the subjects' age, race/ethnicity, regional lymph node status, adjuvant therapies and outcome are available for analysis.

### **Sampling Considerations**

To limit the impact of the independent variables of disease stage, tumor size, prognostic factors (estrogen receptor status, Her-2/neu) and performance of breast self-examination (BSE), study subjects will be matched for as many factors as possible. The final sample of 100 subjects will be divided into two sub-groups: 50 Whites/non-Hispanic and 50 Others including Hispanics. The final sample will be composed of subjects with the most complete data set; however, all data will be analyzed. The interpretation of the data will be descriptive.

In collaboration with biostatistics personnel, biases for the study's sampling and results were identified. White/non-Hispanic women are diagnosed with breast cancer at an earlier stage of disease than women of other races/ethnicities including Hispanics. Stage at diagnosis and treatment delay are known factors affecting outcomes. The study's subjects will be those with cyclin E testing completed; therefore, most subjects are also LAB00-222 participants. Socio-economic factors (income, access to care, education, etc.) may influence the decision to enroll in a research study as well as outcomes. In general, a greater percentage of research participants are Whites/non-Hispanics versus others. Finally, some subjects may have received 'different-era therapy;' that is, standard of care treatments may have changed over time thus altering outcomes.

## **KEY RESEARCH/TRAINING ACCOMPLISHMENTS**

### **Research Accomplishments**

- Access to data sources obtained
- Data integration plans determined
- Data abstraction tool developed
- Data sets available identified (all databases)
- Data coding system reviewed and revised
- Software for study-specific database selected
- Data fields for unique study data identified (for new database)
- Biostatistics collaboration for data analysis plan
- Multiple queries for data completed
- Data collection from medical records initiated
- Abstracted data organized on spreadsheet
- Preliminary subject sample identified (Study Group #1, #3)
- Subjects without cyclin E testing identified (some Group #1 subjects)
- Methodology for cyclin E protein extraction from banked tissue reviewed (UTMDACC IRB# LAB04-0258)
- Data quality checks performed
- New data integrated
- Revised Statement of Work submitted (approved, effective April 20, 2005)
- Study abstracts and Annual Summary prepared

### Training Accomplishments

- Ongoing interactions with multi-disciplinary research team:
  - Mentor
  - Other breast surgical oncologists
  - Breast medical oncologists
  - Experimental radiation oncologist
  - Diagnostic radiologists
  - Therapeutic radiologists
  - Laboratory personnel
  - Breast pathologists
  - Breast oncology pharmacists/Experimental drug pharmacists
  - Breast plastic reconstruction surgeons
  - Research nurses
  - Data personnel: Data analysts, data coordinators
  - Biostatistics analysts
- Continuing education during award period:
  - Self-directed study (text: Hunt KK, Robb GL, Strom EA, Ueno NT [editors]. M.D. Anderson Cancer Care Series, *Breast Cancer*, Springer, New York, 2001)
  - SEE Appendix B
- Career development:
  - Advanced to Level II of RNDM (UTMDACC Research Nurse Development Model)
  - Certified by Association of Clinical Research Professionals (ACRP) as a Clinical Research Coordinator (CCRC) via national exam
  - Advanced degree plan selected: Master's of Public Health

### REPORTABLE OUTCOMES

The award study is a retrospective database study. Research efforts during the period of this Annual Summary focused upon data collection and preparation for analysis.

Reportable outcomes include:

- Study-specific database designed for unique study data (Access format)
- Slide presentation entitled *Collaborative Medical Research* presented at the UTMDACC Clinical Research Nurse Committee Meeting, November 8, 2004. SEE Appendix C.
- Abstract (Era of Hope Meeting). SEE Appendix D.

## CONCLUSIONS

Disease-free survival and overall survival rates cannot be determined for several years and thus are not available during the award period. Data analysis for a preliminary subject sample composed of 400 subjects from 2 of the 3 study cohort groups is scheduled for May 2005. It is hypothesized that prognostic accuracy of SLNS and cyclin E levels are independent of racial/ethnic factors. This finding would suggest SLNS and cyclin E levels could discriminate outcomes within different racial/ethnic groups.

## REFERENCES

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2. Hunter CP. Epidemiology, stage at diagnosis, and tumor biology of breast carcinoma in multiracial and multiethnic populations, Cancer, 88(5 supp): 1193-202, 2000.
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6. Elledge RM, Clark GM, Chamness GC, Osborne CK. Tumor biologic factors and breast cancer prognosis among white, Hispanic, and black women in the United States, J Natl Cancer Inst, 86(9): 705-12, 1994.
7. Hunt KK, Ross MI. Sentinel lymph node dissection in early stage breast cancer, Breast Cancer, 9(4): 282-8, 2002.



## Appendix A – Data Fields

- \_\_\_ UTMDACC medical record number (field MDACC)
- \_\_\_ First name (field FName)
- \_\_\_ Last name (field LName)
- \_\_\_ Date of Birth (field DOB)
- \_\_\_ Date of breast cancer diagnosis (field DOX)
- \_\_\_ Age (field Age)
- \_\_\_ Date entered on database (field Enterdate)
- \_\_\_ Date of last follow-up (field LastFUdate)
- \_\_\_ Bilateral breast cancer (field Bilateral)
- \_\_\_ Clinical stage (field ClinicalStage)
- \_\_\_ Pathology stage (field PathStage)
- \_\_\_ Neo-adjuvant chemotherapy (field PreopChemo)
- \_\_\_ Other malignancies (field OtherMalignancies)
- \_\_\_ Type of other malignancies (field Othermalignancietype)
- \_\_\_ Other history of breast cancers (field OtherBreastCancers)
- \_\_\_ Breast cancer recurrence (field Recurrence)
- \_\_\_ Date of breast cancer recurrence (field Recurrencedate)
- \_\_\_ Site of breast cancer recurrence (field Siterecurrence)
- \_\_\_ Other site of breast cancer recurrence (field Othersite)
- \_\_\_ Follow-up status (field FUSatus)
- \_\_\_ Comments (field Comments)
- \_\_\_ Lost to follow-up (field LOSTFU)
- \_\_\_ Race/ethnicity (field Race)
- \_\_\_ Estrogen receptor status (field ER\_st)
- \_\_\_ Progesterone receptor status (field PR\_st)
- \_\_\_ Her-2/neu status (field Her-2\_st)
- \_\_\_ Lymphovascular invasion on final pathology (field Final LVI)
- \_\_\_ Date of sentinel lymph node pathology (field PBx\_dt)
- \_\_\_ Positive sentinel lymph node (field SLN Positive Histology)
- \_\_\_ Positive non-sentinel lymph node (field NSLN Histology)
- \_\_\_ Menopausal status (field meno\_yn)
- \_\_\_ Socio-economic status (field SE st)
- \_\_\_ Education level (field Educ)
- \_\_\_ Breast self-exam performance (field BSE)
- \_\_\_ Other helath-related behaviors (field OtherHealthBeh)

Appendix B – Continuing Education (Start 3-23-04 – 3-22-05)

The University of Texas M.D. Anderson Cancer Center  
Graduate Medical Education Core Curriculum Lecture Series:

- Carcinogenesis 3-21-05

Interdisciplinary Breast Cancer Journal Club:

- Tamoxifen/XRT Sequencing 2-24-05

Statistical Analysis with STATISTICA 2-16-05

The University of Texas M.D. Anderson Cancer Center  
Division of Cancer Medicine Grand Rounds:

- IND Process Changes at UTMDACC 2-8-05

American College of Surgeons Oncology Group

- Semi-Annual Meeting 1-12 to 1-14-05

The University of Texas M.D. Anderson Cancer Center  
Surgical Oncology Grand Rounds:

- Breast Cancer Prevention 12-15-04
- Translation Initiation in Breast Cancer 12-15-04
- The Role of Cyclin E in Breast Cancer 11-17-04

Prevention, Detection, and Treatment of Chemotherapy-Induced Nausea and Vomiting  
11-15-04

The President's Council on Bioethics: Beyond Tactical Struggles Over Public Policies  
Regarding Cloning and Embryonic Stem Cell Research 11-12-04

The University of Texas M.D. Anderson Cancer Center  
Nursing Research Forum: Heart Success Program – Improving Outcomes in Cancer  
Patients with Heart Failure through Collaborative Practice 11-1-04

Are You Truly Informed about Informed Consent? 9-24-04

The University of Texas M.D. Anderson Cancer Center Breast Cancer Series:

- Anticoagulation in Breast Cancer Part II 3-17-05
- Anticoagulation in Breast Cancer Part I 3-3-05
- Pain Management in Breast Cancer Part I 12-2-04
- Use of Mitomycin-C, Methotrexate and Cytosine in Breast Cancer 10-21-04
- New Trends in Treatment – Trastuzumab in Breast Cancer 9-9-04
- Hormonal Therapies for Metastatic Breast Cancer 8-5-04
- Aromatase Inhibitors 7-8-04
- Other Hormonal Therapies 6-17-04
- Taxanes in Breast Cancer 5-20-04
- Anthracyclines & Anthracenediones in Breast Cancer 5-6-04

Recognizing & Responding to Bioterrorism & Other Public Health Emergencies 8-13-04

Baylor College of Medicine Clinical Research Education: Subject Confidentiality and  
Data Protection Plans 4-29-04

Appendix C - Slide Presentation 11-8-04

**Opportunities  
for  
Collaborative Medical Research**

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Mary Alice Hassett RN, BSN, BA  
Surgical Oncology

**Nurse Researcher vs. Research Nurse**

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- Expanded role
- New skills
- Innovation
- Career options

**Clinical Research Nurse Award**

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- Dept. of Defense Breast Cancer Research Program
- Started FY '02 with funding of 15 proposals
- Goal: Training RNs as Principal Investigators with a multi-disciplinary research team
- Proposal included 3 components: education, clinical research, career development
- Peer-review
- Abstract/poster presentation at Era of Hope program
- Publication at end of award period (2 years)

LAB03-1033  
Outcomes by Ethnicity: Sentinel Node Status  
in Women with Breast Cancer

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- Question: Are differences in breast cancer outcomes related to actual variances in tumor biology or other factors including race/ethnicity?

**Research Plan**

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- Retrospective database study
- 3 cohort groups
- Comparison of nodal status, prognostic factors & outcomes of breast cancer patients by race/ethnicity
- Descriptive analysis

**Relevance**

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- Data may lead to future research into improved strategies for breast cancer prevention and individualized treatment regimens

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W81XH-04-1-042901  
Hassett, Mary A.

#### **Funding Sources**

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- <http://cdmrp.army.mil>
- Nursing organizations
- Private industry
- Non-profit organizations
- Institution-based

**YOU CAN DO IT !**

Appendix D - Abstract for Annual Summary

***Outcomes by Ethnicity: Sentinel Lymph Node Status in Women with Breast Cancer***

Breast cancer incidence and outcomes vary in women of different racial/ethnic backgrounds. Race/ethnicity and tumor biology may affect outcomes. Since regional lymph node status and tumor markers are strong prognostic indicators, this study examines the role of sentinel lymph node status (SLNS) and cyclin E levels in outcomes for women of various races/ethnicities with breast cancer. Data was collected for 400 women from two cohort groups using existing databases and medical records. Data include tumor size, nodal status, estrogen receptor status, HER-2/neu status, cyclin E levels and race/ethnicity. A new database organizes unique study data: socioeconomic status, education and health-related behaviors. Data quality checks and abstraction continue. Subjects will be matched for as many factors as possible. The final sample of 50 Whites/non-Hispanic and 50 others including Hispanics will be analyzed to correlate SLNS to race/ethnicity, cyclin E levels to race/ethnicity and SLNS to cyclin E levels. Disease-free survival and overall survival rates cannot be determined for several years and thus are not available during the award period. It is hypothesized prognostic accuracy of SLNS and cyclin E levels are independent of racial/ethnic factors. This finding would suggest SLNS and cyclin E levels could discriminate outcomes within different racial/ethnic groups.